UNITED STATES PATENT AND TRADEMARK OFFICE

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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

_____

Ex parte OPHIR FRIEDER and ABDUR R. CHOWDHURY

_____

Appeal 2007-1954[1]
Application 09/629,175
Technology Center 2100

_____

Decided:[2] February 3, 2009

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Before MICHAEL R. FLEMING, *Chief Administrative Patent Judge*,
HOWARD B. BLANKENSHIP, ALLEN R. MACDONALD,
JAY P. LUCAS, and ST. JOHN COURTENAY III, *Administrative Patent Judges*.

MACDONALD, *Administrative Patent Judge*.

DECISION ON APPEAL

_____

[1] Hearing held on October 24, 2007.
[2] The two-month time period for filing an appeal or commencing a civil action, as recited in 37 CFR § 1.304, begins to run from the decided date shown on this page of the decision. The time period does not run from the Mail Date (paper delivery) or Notification Date (electronic delivery).

I. STATEMENT OF CASE

Introduction

Appellants appeal under 35 U.S.C. § 134 from a final rejection of claims 1-28, 44-48, and 50-57. We have jurisdiction under 35 U.S.C. § 6(b).

Claims 29 and 34-43 have been cancelled.

Claims 30-33, 49, and 58-62 have been indicated as allowable, but are rejected herein on diverse new grounds of rejection (35 U.S.C. § 101, 112 ¶ 1 and 2) using 37 C.F.R. § 41.50(b).

According to Appellants, the invention relates to a method and system for similar document detection and, more particularly, to detecting whether a document is similar to another document in a document collection (Spec. 1, ll. 5-6).

Exemplary Claim(s)

Exemplary claims 1, 5, 27, 28, 33, 44, 50, and 51, read as follows:

1. A method for detecting similar documents comprising the steps of;

> obtaining a document;
>
> filtering the document to eliminate tokens and obtain a filtered document containing remaining tokens, the tokens being eliminated based on at least one of (a) parts of speech and (b) collection statistics relating to a number of occurrences of words or phrases in the document;
>
> sorting the filtered document to reorder the tokens according to a predetermined ranking; generating a single tuple for the filtered document;
>
> comparing the tuple for the filtered document with a document storage structure comprising a plurality of tuples, each tuple in the plurality of tuples representing one of a plurality of documents; and

determining if the tuple for the filtered document is clustered with another tuple in the document storage structure, thereby detecting if the document is similar to another document represented by the another tuple in the document storage structure.

5. A method as in claim 44, wherein

the step of filtering further comprises retaining a token in the token stream as a retained token according to at least one token threshold; and

the step of determining the hash value for the filtered document comprises determining the hash value by processing individually each retained token in the token stream.

27. A computer for performing the method of claim 1.

28. A computer-readable medium having software for performing the method of claim 1.

33. An apparatus for detecting similar documents comprising:

means for obtaining a document;

means for parsing the document to remove formatting and to obtain a token stream, the token stream comprising a plurality of tokens;

means for retaining only retained tokens in the token stream by using at least one token threshold;

means for reordering the retained tokens to obtain an arranged token stream;

means for processing in turn each retained token in the arranged token stream using a hash algorithm to obtain a single hash value for the document;

means for generating a document identifier for the document;

means for forming a single tuple for the document, the tuple comprising the document identifier for the document and the hash value for the document;

means for inserting the tuple for the document into a document storage tree, the document storage tree comprising a plurality of

tuples, each tuple located at a bucket of the document storage tree, each tuple in the plurality of tuples representing one of a plurality of documents, each tuple in the plurality of tuples comprising a document identifier and a hash value; and

means for determining if the tuple for the document is co-located with another tuple at a same bucket in the document storage tree, thereby detecting if the document is similar to another document represented by the another tuple in the document storage tree.

44. A method as claimed in claim 1, wherein

the method further comprises determining a document identifier for the filtered document and a single hash value for the filtered document,

the tuple comprises the document identifier for the filtered document and the hash value for the filtered document, and

each tuple in the plurality of tuples comprising a document identifier and a hash value.

50. A method for detecting similar documents comprising the steps of:

obtaining a document;

filtering the document to eliminate tokens based on parts of speech and obtain a filtered document;

generating a single tuple for the filtered document;

comparing the tuple for the filtered document with a document storage structure comprising a plurality of tuples, each tuple in the plurality of tuples representing one of a plurality of documents; and

determining if the tuple for the filtered document is clustered with another tuple in the document storage structure, thereby detecting if the document is similar to another document represented by the another tuple in the document storage structure.

51. An apparatus for detecting similar documents comprising:

> means for obtaining a document;
>
> a filter to filter the document to eliminate tokens based on parts of speech and obtain a filtered document;
>
> a tuple unit to generate a single tuple for the filtered document;
>
> a comparator to compare the tuple for the filtered document with a document storage structure comprising a plurality of tuples, each tuple in the plurality of tuples representing one of a plurality of documents; and
>
> a decision unit to determine if the tuple for the filtered document is clustered with another tuple in the document storage structure, based on the comparison, thereby detecting if the document is similar to another document represented by the another tuple in the document storage structure.

Prior Art

The prior art relied upon by the Examiner in rejecting the claims on appeal is:

Haber	US 5,136,646	Aug. 4, 1992
Aiken	US 6,240,409 B1	May 29, 2001

Rejections on Appeal

The Examiner rejected claims 1-28, 45-48, and 50-57 under 35 U.S.C. § 103(a) as being unpatentable over Aiken.[3]

The Examiner rejected claim 44 under 35 U.S.C. § 103(a) as being unpatentable over the combination of Aiken and Haber.

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[3] We note that claims 5, 15-19, and 25 are rejected based on a single reference (Aiken) even though claim 44 (from which these claims depend) is rejected based on a combination of references (Aiken and Haber). We treat these dependent claims as rejected under the combination of references.

Appellants' Contentions

Appellants contend that the subject matter of claims 50 and 51 would not have been obvious. More specifically, Appellants contend that the Examiner erred in rejecting claims 50 and 51 under 35 U.S.C. § 103(a) because:

> (1) Aiken does not teach or suggest "the removal of tokens based on parts of speech" as required by claims 50 and 51 (App. Br. 13:29-30).

Appellants also contend that the subject matter of claims 1-28, 44-48, and 52-57 would not have been obvious. More specifically, Appellants contend that the Examiner erred in rejecting claims 1-28, 44-48, and 52-57 under 35 U.S.C. § 103(a) because:

> (2) The "at least one of (a) parts of speech and (b) collection statistics" clause of independent claim 1 (from which claims 2-28, 44-48, and 52-57 depend), has been misconstrued by the Examiner as "not requir[ing] both limitations (a) and (b), only at least one of the two" (Ans. 11:8-9). Rather, the Examiner must follow the court's holding in *Superguide* which results in claim 1 requiring filtering based on both limitations (a) and (b). *Superguide Corp. v. DirecTV Enterprises, Inc.*, 358 F.3d 870, 886 (Fed. Cir. 2004). (Reply Br. 8.)

> (3) Aiken does not teach or suggest "the removal of tokens based on parts of speech" as required by claim 1 (App. Br. 13:29-30).

> (4) Although Appellants acknowledge that "Aiken specifically discloses 'removing words 'this' and 'is' under the assumption that they are words that would be used frequently'," "Aiken does not

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teach or suggest whether the frequency of a word in a document would be used to remove such a word" as required by claim 1 (App. Br. 14:25-29).

Result

We affirm-in-part

We enter new grounds of rejection as to all pending claims pursuant to our authority under 37 C.F.R. § 41.50(b).

II. ISSUES

A. *Issues on Appeal*

(1)

Whether Appellants have shown that the Examiner has erred because Aiken does not teach limitations required by claims 1, 50, and 51?

(2)

Whether Appellants have shown that the Examiner has erred because the construction of claim 1 requires both (a) parts of speech and (b) collection statistics?

B. *Additional Issues Raised by the Pending Claims*
And Addressed in New Grounds of Rejection

(1)
Method Claims

Whether method claims 1-26, 30, 44-50, and 52-62 are statutory subject matter under 35 U.S.C. § 101, if they do not transform a particular

article into a different state or thing, and are not tied to a particular machine or apparatus?

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(2)

Apparatus Claims

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Whether apparatus claim 33, which is in means-plus-function format, is definite under 35 U.S.C. § 112, second paragraph if a means is not supported by corresponding structure in the specification?

Whether apparatus claim 51, which includes functional elements, is indefinite under 35 U.S.C. § 112, second paragraph if a functional element is not identified as being in means-plus-function format and is amenable to two plausible claim constructions?

Whether apparatus claims 27 and 31, which each recite only functional limitations for the claimed apparatus, are enabled under 35 U.S.C. § 112, first paragraph, for the scope of the claims?

Whether apparatus claim 51 violates the rule set forth in *Halliburton*, because the claim includes functional elements not limited by the application of 35 U.S.C. § 112, sixth paragraph and not containing any additional recitation of structure, so that claim 51 is not enabled under 35 U.S.C. § 112, first paragraph, for the scope of the claims?

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(3)

Article of Manufacture Claims

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Whether article of manufacture claims 28 and 32 which each recite only functional limitations for the claimed articles, are enabled under 35 U.S.C. § 112, first paragraph, for the scope of the claims?

Whether article of manufacture claims 27 and 31 are directed to non-statutory subject matter under 35 U.S.C. § 101 because of the carrier-

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wave embodiments of these claims, regardless of any other statutory embodiments?

III. FINDINGS OF FACT

The following Findings of Fact (FF) are shown by a preponderance of the evidence. *Ethicon, Inc. v. Quigg*, 849 F.2d 1422, 1427 (Fed. Cir. 1988) (explaining the general evidentiary standard for proceedings before the Office).

Appellants' Invention

1. According to Appellants, "the invention relates to a system for similar document detection and more particularly, to detecting whether a document is similar to another document in a document collection" (Spec. 1, ll. 5-6).

2. "A 'document' refers to a computer-readable file comprising text. As an option, the document comprises text and at least one of the following: an image, a graphical object, audio, video, and the like. The invention is not restricted as to the size of a document." (Spec. 9, ll. 8-10).

2.A. The "text" of Appellants' specification is not any particular physical object. Rather, it is text in general, regardless of the source of the text. (Spec. 9, ll. 8-10; and 10, ll. 23-30).

3. "A document is referred to as being 'similar' to another document if the two documents contain roughly the same semantic content, whether or not the two documents are a precise syntactic match" (Spec. 9, ll. 11-13).

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4. "A 'token' refers to any representation of context in a document" (Spec. 9, l. 16).

5. "Examples of a token include: a word; a phrase (e.g., 'New York,' or 'to be or not to be'); a portion of a word (e.g., ing, or qu), which is known as an n-gram, or a bi-gram, a tri-gram, and so on; a symbol; a number; any plural thereof; and any combination thereof" (Spec. 9, ll. 16-19).

6. "A 'tuple' refers to a data structure having two or more portions" (Spec. 9, l. 20).

7. "A 'computer' refers to any apparatus that is capable of accepting a structured input, processing the structured input according to prescribed rules, and producing results of the processing as output" (Spec. 9, ll. 21-23).

8. Appellants state:

> Examples of a computer include: a computer; a general purpose computer; a supercomputer; a mainframe; a super mini-computer; a mini-computer; a workstation; a microcomputer; a server; an interactive television; and a hybrid combination of a computer and an interactive television. A computer can have a single processor or multiple processors, which can operate in parallel and/or not in parallel. A computer also refers to two or more computers connected together via a network for transmitting or receiving information between the computers. An example of such a computer includes a distributed computer system for processing information via computers linked by a network

(Spec. 9, ll. 23-30).

9. "A 'computer-readable medium' refers to any storage device used for storing data accessible by a computer" (Spec. 10, ll. 1-2).

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10. "Examples of a computer-readable medium include: a magnetic hard disk; a floppy disk; an optical disk, such as a CD-ROM and a DVD; a magnetic tape; a memory chip; and a carrier wave used to carry computer-readable electronic data, such as those used in transmitting and receiving e-mail or in accessing a network" (Spec. 10, ll. 2-5).

11. "[A] token is removed from a token stream based on a determination as to which part of speech the token represents" (Spec. 12, ll. 22-23).

12. "Examples of parts of speech include: a noun, a verb, an adjective, an adverb, a preposition; and a type of noun (e.g., a person, a place, a thing)" (Spec. 12, ll. 23-25).

13. "[T]he tuple for the filtered document is compared with a document storage structure for the document collection" (Spec. 16, ll. 7-8).

14. "The document storage structure for the document collection comprises any data structure that is efficient for storing and accessing representations of the documents in the document collection" (Spec. 16, ll. 8-10).

15. Examples of data structures useful for the document storage structure include the following: a hash table; a tree, such as a binary tree, a balanced binary tree, and a red-black binary tree; a queue; a ring; an array; and any combination of data structures (Spec. 16, ll. 10-13).

16. Appellants' Appendix A recites "pseudo-code" for implementing the invention. (Spec. 22-23) The "pseudo-code is further discussed at pages 19-20 of Appellants' specification.

Aiken

17.   Aiken relates to utility programs used to detect similarities and differences among multiple documents of the same or different type (col. 1, ll. 9-11).

18.   A hash function is applied to a selected substring within the translated string, or document (col. 5, ll. 33-34).

19.   To save memory, not every substring's hash value is saved (col. 6, ll. 29-30).

20.   An English sentence is translated by having punctuation, white spaces, and capitalization removed (col. 4, ll. 55-57).

21.   Further processing can include removing unimportant words such as "the" or "and" (col. 4, ll. 57-58).

22.   Further preprocessing of raw data string 302 could include removing words "this" and "is" under the assumption that they are words that would be used frequently anyway (col. 8, l. 67 through col. 9, l. 3).

23.   String translation rules are tailored for the type of document, such as common or frequent words expected in documents from a particular source (col. 4, ll. 47-53).

IV. PRINCIPLES OF LAW

Burden on Appeal

Appellants have the burden on appeal to the Board to demonstrate error in the Examiner's position. *See In re Kahn*, 441 F.3d 977, 985-86 (Fed. Cir. 2006) ("On appeal to the Board, an applicant can overcome a rejection [under § 103] by showing insufficient evidence of *prima facie* obviousness or by rebutting the *prima facie* case with evidence of secondary

indicia of nonobviousness.") (quoting *In re Rouffet*, 149 F.3d 1350, 1355 (Fed. Cir. 1998)). *See Hyatt v. Dudas* , 492 F.3d 1365, 1368 (Fed. Cir. 2007) ("As we explained in *In re Oetiker*, the prima facie case is merely a procedural device that enables an appropriate shift of the burden of production.") *See Id.* ("Once the applicant is so notified, the burden shifts to the applicant to rebut the prima facie case with evidence and/or argument.")

Claim Construction

In *Superguide* the court set forth a claim construction rule with respect to using the phrase "at least one of" to modify plural categories. The court held that:

> The phrase "at least one of" precedes a series of categories of criteria, and the patentee used the term "and" to separate the categories of criteria, which connotes a conjunctive list. A common treatise on grammar teaches that "an article of a preposition applying to all the members of the series must either be used only before the first term or else be repeated before each term." William Strunk, Jr. & E.B. White, *The Elements of Style* 27 (4th ed. 2000). Thus, "[i]n spring, summer, or winter" means "in spring, in summer, or in winter." *Id.* Applying this grammatical principle here, the phrase "at least one of" modifies each member of the list, i.e., each category in the list.

Superguide, 358 F.3d at 886.

During prosecution, "the PTO gives claims their 'broadest reasonable interpretation.'" *In re Bigio*, 381 F.3d 1320, 1324 (Fed. Cir. 2004) (quoting *In re Hyatt*, 211 F.3d 1367, 1372 (Fed. Cir. 2000)).

The USPTO is not required in the course of prosecution to interpret claims in the same manner as courts are required to during infringement proceedings.

> It would be inconsistent with the role assigned to the PTO in
> issuing a patent to require it to interpret claims in the same
> manner as judges who, post-issuance, operate under the
> assumption the patent is valid.

In re Morris, 127 F.3d 1048, 1054 (Fed. Cir.1997).

The question then is whether the PTO's interpretation of the disputed claim language is "reasonable." *Id* at 1055.

V. ANALYSIS

Claims 50 and 51 - Contention (1)

We agree with Appellants' contention that Aiken fails to teach or suggest the removal of tokens based on parts of speech as required by claims 50 and 51. Appellants' Specification discloses token removal based on "parts of speech" (FF 11) and provides examples such as "noun" or "verb" (FF 12). We find that the Aiken reference removes words based on a word such as "the" or "and" (FF 21), and Aiken does not provide any indication that removal relates to which part of speech (its category) the removed word belongs. We conclude the Examiner has erred because the mere fact that a removed word in Aiken can be labeled as a "part of speech" does not equate to the claimed removal being based on its part of speech .

Appellants have established that the Examiner erred with respect to this rejection of claims 50 and 51 under § 103(a).

Claim 1 - Contention (2)

We disagree with Appellants' contention that the Examiner erred as to the construction of claim 1 (and its dependent claims). (Reply Br. 8.)

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Claim 1 reads in part "the tokens being eliminated based on at least one of (a) parts of speech and (b) collection statistics" which the Examiner has essentially construed as including three embodiments (Ans. 11:8-9), as follows:

    i. the tokens being eliminated based on only parts of speech, or

    ii. the tokens being eliminated based on only collection statistics, or

    iii. the tokens being eliminated based on both (a) parts of speech and (b) collection statistics.

Each of these embodiments is supported in the Specification at page 12, lines 23-30, page 12, lines 17-19, and page 13, lines 18-19, respectively.[4] The question before us is, whether the Examiner's interpretation is reasonable? (*Morris*, 127 F.3d at 1055.)

Although Appellants now argue that claim 1 is limited to embodiment (iii) above (Reply Br. 8), the Examiner's interpretation is supported by Appellants' Summary of Claimed Subject Matter which states in part:

> Claim 1 further recites filtering the document, disclosed in Figure 1 as block 2. For example, the filtering step is based on parts of speech. See specification page 12, lines 23-30. Alternatively or additionally, the filtering step may be based on collection statistics relating to a number of occurrences of

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[4] Even in the *Superguide* decision cited by Appellants the court relied on the meaning given in the specification. In that case it was clear that a recording of a program required for each program to be recorded with the start time, end time, service (channel) and program type. Thus, there was more of a logical imperative to select an element from each list conjoined by the "ands" in that case. (*Id.* at 883) From the specification in the instant case it is clear that to have effect, elimination of words based on both parts of speech and collection statistics is not required.

words or phrases in the document[.] See specification page 11,
lines 1-7, for example.

(App. Br. 7). The "[a]lternatively or additionally" language in this portion
of the Summary shows that as of the filing of the Appeal Brief the
Appellants construed this section of claim 1 in exactly the same manner as
the Examiner.

Additionally, as the court noted in *Ortho-McNeil*, "dictionary
definitions of *and*, while most often listing the additive sense as the most
common usage of the term, also show usage of the term to connote
alternatives." *Ortho-McNeil Pharmaceutical v. Mylan Lab's, Inc.*, 520 F.3d
1358, 1362 (Fed. Cir. 2008) (citing *Webster's Third New International
Dictionary* (2002)).

Therefore, for the reasons discussed above, we conclude that the
Examiner's interpretation of the claim is reasonable. Further, we conclude
Appellants are mistaken in their belief that the court's holding in *Superguide*
precludes the Examiner's reading of claim 1 as requiring limitations (a) and
(b) in the alternative. *See Morris*, 127 F.3d at 1054. However, we also note
that Appellants are not precluded from amending the claim to limit it to the
embodiment now argued.

Claim 1 - Contention (3)

As discussed *supra*, we disagree with Appellants' contention that
claim construction of claim 1 requires filtering based on both (a) parts of
speech and (b) collection statistics. Therefore, even though we agree with
Appellants' contention that Aiken fails to teach or suggest the removal of
tokens based on parts of speech, this alone is not sufficient to establish that
the Examiner erred with respect to the rejection of claim 1. To establish that

the Examiner erred, it also must be shown Aiken fails to teach or suggest the removal of tokens based on collection statistics as recited in claim 1. See Contention (4) *infra*.

Claim 1 - Contention (4)

We disagree with Appellants' contention that although Appellants acknowledge that "Aiken specifically discloses 'removing words 'this' and 'is' under the assumption that they are words that would be used frequently'," "Aiken does not teach or suggest whether the frequency of a word in a document would be used to remove such a word" as required by claim 1 (App. Br. 14:25-29).

Contrary to Appellants' contention, Aiken explicitly describes that the frequency of words to be removed is document based. (FF 22, 23).

Claim 1

For the reasons discussed *supra*, Appellants have not established that the Examiner erred with respect to this rejection of claim 1 under § 103(a).

Claims 2-28, 45-48, and 52-57

Appellants have not separately argued claims 2-28, 45-48, and 52-57 and thus have not established that the Examiner erred with respect to the rejection of claims 2-28, 45-48, and 52-57 for the same reasons set forth above for claim 1.

Claim 44

Appellants have not separately argued claim 44 and thus have not established that the Examiner erred with respect to the rejection of claim 44 for the same reasons set forth above for claim 1 from which it depends.

VI. METHOD CLAIMS 1-26, 30, 44-50, AND 52-62
- NEW GROUND OF REJECTION

A. *Rejection of Method Claims 1-26, 30, 44-50, and 52-62 under 35 U.S.C. § 101*

(1)
Introduction

Using our authority under 37 C.F.R. § 41.50(b), we reject method claims 1-26, 30, 44-50, and 52-62 under 35 U.S.C. § 101 because the claimed invention is directed to non-statutory subject matter.

(2)
Principles of Law

(a)
Claim Construction

> [Whether a] patent is invalid for failure to claim statutory
> subject matter under § 101, is a matter of both claim
> construction and statutory construction.

State St. Bank & Trust Co. v. Signature Fin. Group, 149 F.3d 1368, 1370 (Fed. Cir. 1998).

(b)
35 U.S.C. § 101

> Whoever invents or discovers any new and useful process,
> machine, manufacture, or composition of matter, or any new
> and useful improvement thereof, may obtain a patent therefor,
> subject to the conditions and requirements of this title.

35 U.S.C. § 101.

> [T]he Court has held that a claim is not a patent-eligible
> "process" if it claims "laws of nature, natural phenomena, [or]
> abstract ideas." *Diamond v. Diehr*, 450 U.S. 175, 185 (1981)
> (citing Flook, 437 U.S. at 589, and *Gottschalk v. Benson*, 409
> U.S. 63, 67 (1972)). Such fundamental principles [as "laws of
> nature, natural phenomena, and abstract ideas"] are "part of the

storehouse of knowledge of all men . . . free to all men and reserved exclusively to none." *Funk Bros. Seed Co. v. Kalo Inoculant Co.*, 333 U.S. 127, 130 (1948); *see also Le Roy v. Tatham*, 55 U.S. (14 How.) 156, 175 (1852) ("A principle, in the abstract, is a fundamental truth; an original cause; a motive; these cannot be patented, as no one can claim in either of them an exclusive right."). "Phenomena of nature, though just discovered, mental processes, and abstract intellectual concepts are not patentable, as they are the basic tools of scientific and technological work." *Benson*, 409 U.S. at 67.

In re Bilski, 545 F.3d 943, 952 (Fed. Cir. 2008) (footnote omitted).

The Court in *Diehr* thus drew a distinction between those claims that "seek to pre-empt the use of" a fundamental principle, on the one hand, and claims that seek only to foreclose others from using a particular "application " of that fundamental principle, on the other. 450 U.S. at 187, 101 S.Ct. 1048. Patents, by definition, grant the power to exclude others from practicing that which the patent claims. *Diehr* can be understood to suggest that whether a claim is drawn only to a fundamental principle is essentially an inquiry into the scope of that exclusion; i.e., whether the effect of allowing the claim would be to allow the patentee to pre-empt substantially all uses of that fundamental principle. If so, the claim is not drawn to patent-eligible subject matter.

Id. 545 F.3d at 953.

The Supreme Court . . . has enunciated a definitive test to determine whether a process claim is tailored narrowly enough to encompass only a particular application of a fundamental principle rather than to pre-empt the principle itself. A claimed process is surely patent-eligible under § 101 if: (1) it is tied to a particular machine or apparatus, or (2) it transforms a particular article into a different state or thing. *See Benson*, 409 U.S. at 70 ("Transformation and reduction of an article 'to a different state or thing' is the clue to the patentability of a process claim that does not include particular machines."); *Diehr*, 450 U.S. at

192 (holding that use of mathematical formula in process "transforming or reducing an article to a different state or thing" constitutes patent-eligible subject matter); *see also Flook*, 437 U.S. at 589 n.9 ("An argument can be made [that the Supreme] Court has only recognized a process as within the statutory definition when it either was tied to a particular apparatus or operated to change materials to a 'different state or thing'"); *Cochrane v. Deener*, 94 U.S. 780, 788 (1876) ("A process is . . . an act, or a series of acts, performed upon the subject-matter to be transformed and reduced to a different state or thing.").

Id. 545 F.3d at 954 (footnote omitted).

The machine-or-transformation test is a two-branched inquiry; an applicant may show that a process claim satisfies § 101 either by showing that his claim is tied to a particular machine, or by showing that his claim transforms an article. *See Benson*, 409 U.S. at 70. Certain considerations are applicable to analysis under either branch. First, as illustrated by Benson and discussed below, the use of a specific machine or transformation of an article must impose meaningful limits on the claim's scope to impart patent-eligibility. *See Benson*, 409 U.S. at 71-72. Second, the involvement of the machine or transformation in the claimed process must not merely be insignificant extra-solution activity. *See Flook*, 437 U.S. at 590.

Id. 545 F.3d at 961-62.

Purported transformations or manipulations simply of public or private legal obligations or relationships, business risks, or other such abstractions cannot meet the test because they are not physical objects or substances, and they are not representative of physical objects or substances.

Id. 545 F.3d at 963.

(3)
Analysis

(a)

As a preliminary matter, we address the construction of method claims 1-26, 30, 44-50, and 52-62. Claim 1, reproduced *supra*, is exemplary. Appellants' claim 1 recites "a method for detecting similar documents."

We find that the first step of claim 1 recites "obtaining a document" unlimited by any particular manner of obtaining.[5] We find that Appellants define a "document" as "a computer-readable file comprising text," which document is not restricted as to size. (Spec. 9, ll. 8-10). We also find that Appellants distinguish a "document" from the more narrow term "paper document" used in one example of obtaining the document. (Spec. 10, ll. 28-30). We find that Appellants also explicitly distinguish data from the computer-readable medium carrying the data (Spec. 10, ll. 1-5). Therefore, we conclude that Appellants' claimed "document" is an abstraction comprising text data per se rather than the text data combined with any particular tangible carrier medium such as a floppy disk.

We find that the second step of claim 1 filters the document to generate a filtered document comprising "tokens." We find that Appellants define "tokens" as "any representation of context in a document" (Spec. 9, l. 16). We also find that examples of which include: a word; a phrase (e.g.,

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[5] Our use of the term "particular manner of obtaining" throughout our findings and conclusions is to mean the use of a particular machine or apparatus that would not pre-empt the use of the principle involve. See *In re Bilski*, 545 F.3d 943, 953 (Fed. Cir. 2008)

"New York," or "to be or not to be"); a portion of a word (e.g., ing, or qu), which is known as an n-gram, or a bi-gram, a tri-gram, and so on; a symbol; a number; any plural thereof; and any combination thereof (Spec. 9, ll. 16-19).

We find that the third step of claim 1 sorts the filtered document and generates a single "tuple." We find that Appellants define "tuple" as "a data structure having two or more portions" (Spec. 9, l. 20).

We find that the fourth step of claim 1 compares the generated tuple with a document storage structure comprising a plurality of tuples each representative of another document. We conclude that Appellants' claimed "document storage structure" is not limited to a physical device because we find that Appellants' examples thereof (Spec. 16, ll. 7-16) are merely data structures per se, e.g., "a tree", "a ring", or "an array".

The definition of "data structure" is "a physical or logical relationship among data elements, designed to support specific data manipulation functions." The New IEEE Standard Dictionary of Electrical and Electronics Terms 308 (5th ed. 1993). Unlike the data structure of *Lowry*, we find that Appellants do not claim that their data structure is embodied in any tangible computer-readable storage medium or even that it has a physical tangible embodiment at all. More importantly, we find that Appellants do not claim that their data structure is a particular data structure such as found in *Lowry*. *In re Lowry*, 32 F.3d 1579, 1580 (Fed. Cir. 1994) ("Lowry's data structure comprises a plurality of attribute data objects (ADOs) stored in memory"); *id*, 32 F.3d at 1584 ("The ADOs follow a particular sequence that enables more efficient data processing operations on stored data."). Therefore, rather

than being physical, we conclude that Appellants' claimed "tuple" and "document storage structure" are instead merely logical relationships among data elements, i.e., they encompass any and every disembodied data structure. While we acknowledge that in this art many practitioners wish to treat such disembodied data structures and intangible constructs as physical entities analogous to the "articles of manufacture" in the statute, in reality and in the eyes of the law they are not so. An avatar in the computer world of "Second Life" is not a human being; a broadly defined "document storage structure" is not a steel file cabinet; not an "article of manufacture".

We find that the fifth step of claim 1 determines if the generated tuple is clustered with another tuple in the document storage structure thereby detecting if the document is similar to another document.

(b)

It is self-evident that these claims are not directed to a machine, manufacture, or composition of matter. Thus, the issue before us is whether method claims 1-26, 30, 44-50, and 52-62 claims are directed to a "process," within the meaning of 35 U.S.C. § 101, as that term has been defined by our reviewing courts. More particularly, the issue before us is whether the "process" (1) is tied to a particular machine or apparatus, or (2) transforms a particular article into a different state or thing.

The steps of claim 1 are essentially directed to obtaining raw data (a document); filtering, sorting, and generating logical data from the raw data; and then comparing the logical data to other logical data and determining if the generated logical data is similar to the other logical data.

The claimed method is not tied to a particular machine or apparatus. Furthermore, the claimed method does not transform a particular article into a different state or thing. *SeeBilski*, 545 F.3d at 954. Even if the raw data and logical data were deemed to be articles (which they are not), they are not particular as required by the transformation prong of *Bilski*.

Additionally, the claimed method is not both (a) limited to a practical application of a fundamental principle to transform specific data, and (b) limited to a visual depiction that represents specific physical objects or substances. *Bilski*, 545 F.3d 943, 962-63 (discussing the transformation of *In re Abele*, 684 F.2d 902 (CCPA 1982)).

For the reasons discussed supra, we conclude that these method claims do not call for any transformation of a particular physical article or substance to a different state or thing. We conclude that on their face these method claims do not require any particular machine or apparatus to perform the steps. Like the method claims in *Bilski*, Appellants' method claims transform or manipulate abstractions and are unpatentable under § 101 because they do not qualify as a "process" under § 101.

VII. APPARATUS CLAIMS 27, 31, 33, AND 51
- NEW GROUNDS OF REJECTION

A. *Rejection of Apparatus Claims 33 and 51 under*
35 U.S.C. § 112, Second Paragraph

(1)
Introduction

Using our authority under 37 C.F.R. § 41.50(b), we reject apparatus claims 33 and 51 under 35 U.S.C. § 112, second paragraph, as being indefinite.

(2)
Principles Of Law

(a)
35 U.S.C. § 112, Second Paragraph

The test for definiteness under 35 U.S.C. § 112, second paragraph, is whether "those skilled in the art would understand what is claimed when the claim is read in light of the specification." *Orthokinetics, Inc. v. Safety Travel Chairs, Inc.,* 806 F.2d 1565, 1576 (Fed. Cir. 1986) (citations omitted).

(b)
35 U.S.C. § 112, Sixth Paragraph

An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.

35 U.S.C. § 112, sixth paragraph.

The sixth paragraph of 35 U.S.C. § 112 has just as much application during proceedings before the U.S. Patent and Trademark Office as it does

in district court cases for infringement matters. *In re Donaldson Co.,* 16 F.3d 1189, 1194 (Fed. Cir. 1994) (in banc).

It is necessary to decide on an element by element basis whether 35 U.S.C. 112, sixth paragraph, applies. Not all terms in a means-plus-function or step-plus-function clause are limited to what is disclosed in the written description and equivalents thereof, since 35 U.S.C. 112, sixth paragraph, applies only to the interpretation of the means or step that performs the recited function. *See, e.g., IMS Technology Inc. v. Haas Automation Inc.,* 206 F.3d 1422 (Fed. Cir. 2000) (the term "data block" in the phrase "means to sequentially display data block inquiries" was not the means that caused the sequential display, and its meaning was not limited to the disclosed embodiment and equivalents thereof.).

"An element of a claim described as a means for performing a function, if read literally, would encompass any means for performing the function. But section 112 ¶ 6 operates to cut back on the types of means which could literally satisfy the claim language." *Johnston v. IVAC Corp.,* 885 F.2d 1574, 1580 (Fed. Cir. 1989) (citations omitted).

"Properly understood section 112 ¶ 6 operates more like the reverse doctrine of equivalents than the doctrine of equivalents because it restricts the scope of the literal claim language." *Id.*

"[T]he 'broadest reasonable interpretation' that an Examiner may give means-plus-function[or step-plus-function] language is that statutorily mandated in paragraph six." *In re Donaldson Co.,* 16 F.3d at 1194-95.

"In this paragraph, structure and material go with means, acts go with steps" *O.I. Corp. v. Tekmar,* 115 F.3d 1576, 1583 (Fed. Cir. 1997).

(3)

Analysis

(a)

Rejection of claim 33 under 35 U.S.C. § 112, second paragraph

(i)

If one skilled in the art would be able to identify the structure, material or acts for performing the claimed function, then the requirements of 35 U.S.C. 112, second paragraph, are satisfied. *See Atmel Corp. v. Information Storage Devices, Inc.*, 198 F.3d 1374, 1381 (Fed. Cir. 1999); *In re Dossel*, 115 F.3d 942, 946-47 (Fed. Cir. 1997). However, a rejection under 35 U.S.C. 112, second paragraph, is appropriate if there is no disclosure (or insufficient disclosure) of structure, material or acts for performing the claimed function (e.g., a bare statement that known techniques or methods can be used would not be a sufficient disclosure). *See In re Donaldson Co.*, 16 F.3d at 1195; *Biomedino*, 490 F.3d at 952.

For a computer-implemented means-plus-function claim limitation that invokes 35 U.S.C. 112, sixth paragraph, the corresponding structure is required to be more than simply a general purpose computer or microprocessor. *See Aristocrat Technologies, Inc. v. International Game Technology*, 521 F.3d 1328, 1333 (Fed. Cir. 2008). The corresponding structure for a computer-implemented function is the algorithm. *See WMS Gaming, Inc. v. International Game Technology*, 184 F.3d 1339 (Fed. Cir. 1999). The written description of the specification must at least disclose the algorithm that transforms the general purpose microprocessor to a special purpose computer programmed to perform the disclosed algorithm that

performs the claimed function. *See Aristocrat*, 521 F.3d at 1338.

Applicant may express the algorithm in any understandable terms including

as a mathematical formula, in prose, in a flow chart, or in any other manner

that provides sufficient structure. *See Finisar Corp. v. The DIRECTV Group*

Inc., 523 F.3d 1323, 1340 (Fed. Cir. 2008). *See* MPEP 2181 for examples

where the courts held that the corresponding structure is adequate for the

computer-implemented functions.[6] A rejection under 35 U.S.C. 112, second

paragraph, is appropriate if the written description of the specification

discloses no corresponding algorithm. *See Aristocrat*, 521 F.3d at 1337-38.

For example, merely referencing to a general purpose computer with

appropriate programming without providing any detailed explanation of the

appropriate programming (*See Id.* at 1334.), or simply reciting software

without providing some detail about the means to accomplish the function

(*See Finisar*, at 1340-41.), would not be an adequate disclosure of the

corresponding structure to satisfy the requirements of 35 U.S.C. 112, second

paragraph, even when one skilled in the art is capable of writing the software

to convert a general purpose computer to a special purpose computer to

perform the claimed function.

<div align="center">(ii)</div>

Independent claim 33 (not on appeal) recites nine elements each of

which is in "means-plus-function" form. When a claim uses the term

"means" to describe a limitation, a presumption inheres that the inventor

used the term to invoke § 112, sixth paragraph. *Altiris, Inc. v. Symantec*

Corp., 318 F.3d 1363, 1375 (Fed. Cir. 2003). "This presumption can be

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[6] *See e.g., Dossel*, 115 F.3d at 946-47; *Intel Corp. v. VIA Technologies, Inc.*, 319 F.3d 1357, 1366 (Fed. Cir. 2003).

rebutted when the claim, in addition to the functional language, recites structure sufficient to perform the claimed function in its entirety." *Id.* Because the Appellants use "means" to recite the nine elements of claim 33, we presume that the Appellants did intend to invoke interpretation of these nine under § 112, sixth paragraph.

The first element recites a "means for obtaining a document." The claim recites no other structure for performing the claimed function of "obtaining". We find the Specification clearly associates structure (e.g., a computer system or network) to this function recited in the claim (see page 10, lines 25-30, of Appellants Specification).

We now turn to the claim elements of "means for forming a single tuple for the document" and "means for determining the tuple for the document is collocated with another tuple." Here, the claim elements at issue use the phrase "means for" and the claim recites no other structure for performing the claimed function of "forming" and "determining". Therefore, we must now look to Appellants' Specification to see if it identifies the corresponding structure for each function. Reading Appellants' Specification as a whole, we do not find adequate corresponding structure associated to these functions recited in the claim.

Our review yields a basic discussion of blocks 5 and 7, page 16 at lines 3-6, and page 17 at lines 22-30; an all encompassing disclosure of a computer comprising "any apparatus capable of [performing the functions]" (Spec. 9:21); and a basic, broad-brush, series of functional blocks without sufficient algorithm details regarding how the specific functions are performed (Spec. 22-23). Although Appellants' specification at pages 19-20

and 22-23 sets forth and discusses pseudo-code (Appendix A) for implementing the invention (FF 16), we find that the pseudo-code and the related discussion sets forth the results which are to be accomplished without sufficiently setting forth how those results are actually realized or otherwise obtained. Based upon our review of the Specification, we find that Appellants have not sufficiently disclosed the algorithms which are the corresponding structure (acts) for implementing these functions. Therefore, we further conclude that claim 33 is unpatentable as being indefinite.

As to the remaining six "means-plus-function" elements of claim 33, we repeat the "means for" analysis and ultimately look to Appellants' Specification to see if it identifies the corresponding structure for each function. Reading Appellants' Specification as a whole, again we do not find adequate corresponding structure associated to the remaining functions recited in claim 33.

(b)
Rejection of claim 51 under 35 U.S.C. § 112, second paragraph
(i)

The Federal Circuit has held in post-issuance patent infringement cases that the definiteness requirement "does not compel absolute clarity" and "[o]nly claims 'not amenable to construction' or 'insolubly ambiguous' are indefinite" *Datamize, LLC v. Plumtree Software, Inc.*, 417 F.3d 1342, 1347 (Fed. Cir. 2005) (citations omitted). *See also StarScientific, Inc. v. R.J. Reynolds Tobacco Co.,* Appeal No. 07-1448, slip. op. at 22 (Fed. Cir. August 25, 2008) ("A claim term is not indefinite just because 'it poses a difficult issue of claim construction,'") (quoting *Exxon Research & Eng'g Co. v. United States*, 265 F.3d 1371, 1375 (Fed. Cir. 2001)). The Federal

Circuit has noted that such a high standard of ambiguity for finding indefiniteness is due to the statutory presumption of patent validity. *Exxon Research,* 265 F.3d at 1375 ("By finding claims indefinite only if reasonable efforts at claim construction prove futile, we accord respect to the statutory presumption of patent validity.") *See also Modine Mfg. Co. v. U.S. Int'l Trade Comm'n,* 75 F.3d 1545, 1557 (Fed. Cir. 1996) (rejecting indefiniteness argument after construing claims; stating that "when claims are amenable to more than one construction, they should when reasonably possible be interpreted to preserve their validity"); and *Athletic Alternatives, Inc. v. Prince Mfg., Inc.,* 73 F.3d 1573, 1581 (Fed. Cir. 1996) (court chose the narrower of two equally plausible claim constructions in order to avoid invalidating the claims).

This rule of reading claims narrowly in view of ambiguity runs counter to the USPTO's broader standard for claim construction during prosecution. In particular, unlike in post-issuance claim construction, the USPTO gives pending claims "their broadest reasonable interpretation consistent with the specification" and "in light of the specification as it would be interpreted by one of ordinary skill in the art." *In re Am. Acad. of Sci. Tech. Ctr.,* 367 F.3d 1359, 1364 (Fed. Cir. 2004). This broader claim construction standard is justified because, during prosecution, the applicant has the opportunity to amend the claims, and the Federal Circuit has held that an applicant has the opportunity and the obligation to define his or her invention precisely during proceedings before the USPTO. *See In re Morris,* 127 F.3d 1048, 1056-57 (Fed. Cir. 1997) (35 U.S.C. 112, second paragraph, places the burden of precise claim drafting on the applicant); *In re Zletz,* 893

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F.2d 319, 322 (Fed. Cir. 1989) (manner of claim interpretation that is used

by courts in litigation is not the manner of claim interpretation that is

applicable during prosecution of a pending application before the USPTO).

> As set forth in the MPEP:

> USPTO personnel are to give claims their broadest
> reasonable interpretation in light of the supporting
> disclosure. *In re Morris*, 127 F.3d 1048, 1054-55 (Fed.
> Cir. 1997). Limitations appearing in the specification but
> not recited in the claim should not be read into the claim.
> *E-Pass Techs., Inc. v. 3Com Corp.*, 343 F.3d 1364, 1369
> (Fed. Cir. 2003) (claims must be interpreted "in view of
> the specification" without importing limitations from the
> specification into the claims unnecessarily). *In re Prater*,
> 415 F.2d 1393, 1404-05 (CCPA 1969). See also *In re
> Zletz*, 893 F.2d 319, 321-22 (Fed. Cir. 1989) ("During
> patent examination the pending claims must be
> interpreted as broadly as their terms reasonably allow....
> The reason is simply that during patent prosecution when
> claims can be amended, ambiguities should
> be recognized, scope and breadth of language explored,
> and clarification imposed.... An essential purpose of
> patent examination is to fashion claims that are precise,
> clear, correct, and unambiguous. Only in this way can
> uncertainties of claim scope be removed, as much as
> possible, during the administrative process.").

MPEP § 2106 (II) (Parallel citations omitted). As such, we employ a lower

threshold of ambiguity when reviewing a pending claim for indefiniteness

than those used by post-issuance reviewing courts. In particular, rather than

requiring that the claims are *insolubly ambiguous*, we hold that if a claim is

amenable to two or more plausible claim constructions, i.e., the claim is

ambiguous, the USPTO is justified in requiring the applicant to more

precisely define the metes and bounds of the claimed invention by holding

the claim unpatentable under 35 U.S.C. § 112, second paragraph, as indefinite.

The USPTO, as the sole agency vested with the authority to grant exclusionary rights to inventors for patentable inventions, has a duty to guard the public against patents of ambiguous and vague scope. Such patents exact a cost on society due to their ambiguity that is not commensurate with the benefit that the public gains from disclosure of the invention. The USPTO is justified in using a lower threshold showing of ambiguity to support a finding of indefiniteness under 35 U.S.C. § 112, second paragraph, because the applicant has an opportunity and a duty to amend the claims during prosecution to more clearly and precisely define the metes and bounds of the claimed invention and to more clearly and precisely put the public on notice of the scope of the patent.

As the Federal Circuit recently stated in *Halliburton Energy Servs.*:

> When a claim limitation is defined in purely functional terms, the task of determining whether that limitation is sufficiently definite is a difficult one that is highly dependent on context (e.g., the disclosure in the specification and the knowledge of a person of ordinary skill in the relevant art area). We note that the patent drafter is in the best position to resolve the ambiguity in the patent claims, and *it is highly desirable that patent examiners demand that applicants do so in appropriate circumstances* so that the patent can be amended during prosecution rather than attempting to resolve the ambiguity in litigation.

Halliburton Energy Servs. v. M-ILLC 514 F.3d 1244, 1255 (Fed. Cir. 2008) (emphasis added).

Also, the requirement that the applicant clearly and precisely set out the metes and bounds of the claimed invention prior to completion of

examination of the patentability of the claims furthers the USPTO's duty to issue valid patents. A fundamental principle of patent law is that the claims measure the invention. *United Carbon Co. v. Binney & Smith Co.*, 317 U.S. 228, 232 (1942). The duty of the PTO is to issue valid claims upon whose language the public can rely. *See Keystone Bridge Co. v. Phoenix Iron Co.*, 95 U.S. 274, 278 (1877) ("[In the Patent Office, applicant's] claim is, or is supposed to be, examined, scrutinized, limited, and made to conform to what he is entitled to."); *Burns v. Meyer*, 100 U.S. 671, 672 (1880); *Graham v. John Deere Co.*, 383 U.S. 1, 18 (1966) ("[T]he primary responsibility for sifting out unpatentable material lies in the Patent Office. To await litigation is--for all practical purposes--to debilitate the patent system.").

We realize that our reviewing court has never before set forth a different standard of review for indefiniteness under 35 U.S.C. § 112, second paragraph, for pre-issuance pending claims as compared with post-issuance patented claims. The Federal Circuit has, however, noted that a different standard for indefiniteness may be appropriate during prosecution of patent claims. *See Exxon Research and Engineering Co. v. U.S.*, 265 F.3d 1371, 1384 (Fed. Cir. 2001) ("If this case were before an examiner, the examiner might well be justified in demanding that the applicant more clearly define U_L, and thereby remove any degree of ambiguity. However, we are faced with an issued patent that enjoys a presumption of validity.") Accordingly, we adopt this lower threshold standard of ambiguity for indefiniteness for claims during prosecution in keeping with the USPTO's broadest reasonable interpretation standard for claim construction.

(ii)

34

As we have already noted *supra*, when a claim uses the term "means" to describe a limitation, a presumption inheres that the inventor used the term to invoke § 112, ¶ 6. *Altiris, Inc. v. Symantec Corp.*, 318 F.3d 1363, 1375 (Fed. Cir. 2003). "This presumption can be rebutted when the claim, in addition to the functional language, recites structure sufficient to perform the claimed function in its entirety." *Id.*

As the court set forth in *LG Electronics*:

> " '[A] claim term that does not use 'means' will trigger the rebuttable presumption that § 112 ¶ 6 does not apply.' " *Lighting World, Inc. v. Birchwood Lighting, Inc.*, 382 F.3d 1354, 1358 (Fed. Cir. 2004) (quoting *CCS Fitness, Inc. v. Brunswick Corp.*, 288 F.3d 1359, 1369 (Fed. Cir. 2002)). This presumption can be rebutted "by showing that the claim element recite[s] a function without reciting sufficient structure for performing that function." *Watts v. XL Sys.*, 232 F.3d 877, 880 (Fed. Cir. 2000) (citing *Rodime PLC v. Seagate Tech., Inc.*, 174 F.3d 1294, 1302 (Fed. Cir. 1999)). However, the presumption "is a strong one that is not readily overcome." *Lighting World, Inc.*, 382 F.3d at 1358.

LG Electronics, Inc. v. Bizcom Electronics, Inc., 453 F.3d 1364, 1372 (Fed. Cir. 2006).

(iii)

Independent claim 51 (on appeal) contains no elements which Appellants have been identified in the Appeal Brief as being a "means plus function." Such identification is required by 37 C.F.R. § 41.37(c)(1)(v). Thus, Appellants have in effect indicated that claim 51 is not intended to contain any "means plus function" elements despite the format of any individual claim element.

The first of five elements recited in claim 51 is a "means for obtaining a document." The Appellants use "means" to recite this first element and recite no other structure in the claim for performing the claimed function of "obtaining". Therefore, contrary to any other indications, we presume that the Appellants did intend to invoke interpretation of this element under § 112, sixth paragraph. Also, Appellants point out that the "means for obtaining" is disclosed at page 10, lines 25-30, of the Specification (App. Br. 8:5-7). We conclude that the cited section of the Specification clearly associates structure to the "obtaining" function recited in the claim.

The second and fourth elements of claim 51 are "a filter to filter" and "a comparator to compare," respectively. Although these elements take their names from the functions they perform, for simplification of the issues before us, we will treat the "filter" and "comparator" each as art-recognized sufficient structure to perform the claimed function and as avoiding 112 ¶ 6.

The third and fifth elements of claim 51 are "a tuple unit to generate a single tuple" and "a decision unit to determine if the tuple . . . is clustered," respectively. Here, the claim elements at issue do not use the term "means" which would normally indicate that the claim element is intended to be a "means plus function" element. Also, neither of these "units" is an art-recognized structure to perform the claimed function. Rather, "unit" is a generic term that does not connote sufficiently definite structure and the terms "tuple" (defined by Appellants as "a data structure having two or more portions" (Spec. 9:20)) and "decision" do not further define the generic term so as to add sufficient structure.

Because the Appellants did not use "means" to recite the "tuple unit" and "decision unit" of claim 51, we presume that the Appellants did not intend to invoke interpretation of these elements under § 112, sixth paragraph. In a post-issuance claim construction, a court would then look for a lack of sufficient structure in the claim element in order to rebut the presumption, and if such structure were lacking, construe the claim element under § 112, sixth paragraph. Although we find that the recitation of a "tuple unit" and "decision unit" do not recite sufficient structure to define what is being claimed by these elements, we decline to use this fact in the midst of prosecution of an application to rebut the presumption that § 112, sixth paragraph does not apply, where the Appellants still have the opportunity to clearly invoke § 112, sixth paragraph by amending the claims to use "means for" language if that is indeed their intent.

Our review of claim 51 leaves us with two inconsistent plausible claim constructions for both the "tuple unit" and "decision unit." Either, (1) these elements are limited by § 112(6) to the corresponding structure, material, or acts described in the specification and equivalents thereof (contrary to the indication by Appellants), or (2) these elements are unlimited in their scope (by either § 112(6) or claim recited structure) and include any structure for carrying out the claimed functions.

Due to the fact that the claimed "tuple unit" and "decision unit" are each amenable to two inconsistent plausible claim constructions, we enter a new ground of rejection of claim 51 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and

distinctly claim the subject matter that the Appellants consider to be the invention.

<div align="center">(iv)</div>

We note that had Appellants explicitly indicated that the "tuple unit" and "decision unit" of claim 51 were in fact limited under § 112, sixth paragraph, as "means plus function" elements, then rejections as discussed above with respect to claim 33 would have been appropriate.

<div align="center">

B. *Rejection of Apparatus Claims 27, 31, and 51 under*
35 U.S.C. § 112, First Paragraph

(1)
Introduction

</div>

Using our authority under 37 C.F.R. § 41.50(b), we reject apparatus claims 27, 31, and 51 under 35 U.S.C. § 112, first paragraph, as not being enabled for the scope of the claims.

<div align="center">

(2)
Principles Of Law

(a)
Scope of Enablement

</div>

> Section 112 requires that the patent specification enable "those skilled in the art to make and use the full scope of the claimed invention without 'undue experimentation' " in order to extract meaningful disclosure of the invention and, by this disclosure, advance the technical arts. *Koito Mfg.*, 381 F.3d at 1155 (quoting *Genentech, Inc. v. Novo Nordisk A/S*, 108 F.3d 1361, 1365 (Fed.Cir.1997) (citation omitted)). Because such a disclosure simultaneously puts those skilled in the art on notice of the enforceable boundary of the commercial patent right, the law further makes the enabling disclosure operational as a limitation on claim validity. "The scope of [patent] claims must be less than or equal to the scope of the enablement. The scope

<div align="center">38</div>

of enablement, in turn, is that which is disclosed in the
specification plus the scope of what would be known to one of
ordinary skill in the art without undue experimentation." *Nat'l
Recovery*, 166 F.3d at 1196; *see also In re Goodman*, 11 F.3d
1046, 1050 (Fed.Cir.1993) ("[T]he specification must teach
those of skill in the art 'how to make and how to use the
invention as broadly as it is claimed'."); *In re Fisher*, 57
C.C.P.A. 1099, 427 F.2d 833, 839 (1970) ("[T]he scope of the
claims must bear a reasonable correlation to the scope of
enablement provided by the specification to persons of ordinary
skill in the art."). (footnote omitted).

Invitrogen Corp. v. Clontech Labs. Inc, 429 F.3d 1052, 1070-71 (Fed. Cir.
2005).

<div align="center">(b)</div>

<div align="center">*Scope of Enablement - Single Means*</div>

"The long-recognized problem with a single means claim is that it
covers every conceivable means for achieving the stated result, while the
specification discloses at most only those means known to the inventor. *See
O'Reilly v. Morse*, 56 U.S. (15 How.) 62, 112, 14 L.Ed. 601 (1853)." *In re
Hyatt*, 708 F.2d 712, 714 (Fed. Cir. 1983). The court further stated:

> Thus, the claim is properly rejected for what used to be
> known as "undue breadth," but has since been appreciated as
> being, more accurately, based on the first paragraph of § 112.
> (footnote omitted).

Id.

<div align="center">39</div>

(3)
Analysis

(a)
Rejection of Claims 27 and 31 Under 35 U.S.C. § 112, First Paragraph

Claims 27 (on appeal) and 31 (not on appeal) respectively recite "A computer for performing the method of claim 1" and "A computer for performing the method of claim 30".

The sole structural limitation in each claim is the "computer" which we have found to be (FF 7), and Appellants define as, "any apparatus that is capable of accepting a structured input, processing the structured input according to prescribed rules, and producing results of the processing as output." (Spec. 9:21-23.). Appellants then provide numerous examples of a computer (Spec. 9:23-30). (See FF 8).

Given Appellants' expansive definition, we conclude that the proper construction of "a computer for performing the method of . . ." is as "any [apparatus] for performing the method of . . ." and that Appellants' claims 27 and 31 each cover every conceivable device for achieving the stated result, while the specification discloses at most only those examples known to the inventor. Appellants' claim 27 and 31 are not limited to any particular structure. Rather, these claims cover any and every apparatus for performing the steps of claims 1 and 30, respectively. The problem with these claims is that they cover every conceivable apparatus for achieving the stated result, while the specification discloses at most only those devices known to the inventor. *See O'Reilly v. Morse*, 56 U.S. (15 How.) 62, 112, 14 L.Ed. 601 (1853). The problem in claims 27 and 31 parallels the enablement

problem underlying so called "single means" claims. *In re Hyatt*, 708 F.2d at 714.

The enabling disclosure of the specification is not commensurate in scope with the subject matter encompassed by the claims. At best Appellants' enabling disclosure is limited to the insufficient "basic, broad-brush, series of functional blocks" and "pseudo-code" (Appendix A) discussed *supra* with respect to the new ground of rejection of claim 33.

Therefore, we conclude that claims 27 and 31 are unpatentable as not being enabled for the scope of the claims.

(b)

Rejection of Claim 51 Under 35 U.S.C. § 112, First Paragraph

(i)

35 U.S.C. § 112, sixth paragraph, when enacted, was a statutory response to the Supreme Court's decision in *Halliburton Oil Well Cementing Co. v. Walker*, 329 U.S. 1 (1946). In *Halliburton*,[7] the Supreme Court held invalid an apparatus claim on the ground that it used a "means-plus-function" term which was purely functional. Such a claim was improper because the means term with a stated function merely described a particular end result, did not set forth any specific structure, and would encompass any and all structures for achieving that result, including those which were not what the applicant had invented.

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[7] *Halliburton* was the culmination of a long line of cases dealing with use of terms such as "means" and "mechanisms" in claims. *See, e.g.*, A.W. Deller, *Walker on Patents,* § 166, pp. 790-794 (Deller's Edition 1937).

In *Greenberg*, the Court of Appeals for the Federal Circuit stated:

> As this court has observed, "[t]he record is clear on why
> paragraph six was enacted." *In re Donaldson Co.*, 16 F.3d
> 1189, 1194, 29 USPQ2d 1845, 1849 (Fed. Cir. 1994)(in banc).
> In *Halliburton Oil Well Cementing Co. v. Walker*, 329 U.S. 1,
> 71 USPQ 175 (1946), the Supreme Court held invalid a claim
> that was drafted in means-plus-function fashion. Congress
> enacted paragraph six, originally paragraph three, to overrule
> that holding. In place of the *Halliburton* rule, Congress adopted
> a compromise solution, one that had support in the pre-
> *Halliburton* case law: Congress permitted the use of purely
> functional language in claims, but it limited the breadth of such
> claim language by restricting its scope to the structure disclosed
> in the specification and equivalents thereof. *See Valmont*
> *Indus., Inc. v. Reinke Mfg. Co.*, 983 F.2d 1039, 1041-42, 25
> USPQ2d 1451, 1453-54 (Fed. Cir. 1993); *In re Fuetterer*, 319
> F.2d 259, 264 n.11, 138 USPQ 217, 222 n.11 (CCPA 1963).
> (Emphasis added.)

Greenberg v. Ethicon Endo-Surgery Inc., 91 F.3d 1580, 1582 (Fed. Cir.

1996). As the Federal Circuit explained, the statutory solution represents

only a compromise.

The so-called "Halliburton rule" addressed "conveniently functional

language at the exact point of novelty." *Halliburton,* 329 U.S. at 8. More

generally, *Halliburton* proscribed purely functional claiming by prohibiting

a patentee from using "broad functional claims" to "obtain greater coverage

by failing to describe his invention than by describing it as the statute

commands." *Id.* at 12-13. Although the Halliburton rule may have looked

for purely functional language only at the exact point of novelty, the broader

concerns expressed by the Court in *Halliburton* are still valid regardless of

where the purely functional claim element appears in the claim.

In particular, the Court in *Halliburton* feared the "overhanging threat" of the functional claim which "barred anyone from using in an oil well any device heretofore or hereafter invented which combined with the [prior art] machines performs the function of clearly and distinctly catching and recording echoes from tubing joints with regularity." *Id.* at 12. The Court explained that "[j]ust how many different devices there are of various kinds and characters which would serve to emphasize these echoes, we do not know." *Id.* The Court further explained,

> In this age of technological development there may be many other devices beyond our present information or indeed our imagination which will perform that function and yet fit these claims. And unless frightened from the course of experimentation by broad functional claims like these, inventive genius may evolve many more devices to accomplish the same purpose.

Id. (citations omitted).

This general prohibition against the use of "purely functional claim language" (and the more specific Halliburton rule) has not been completely eliminated. Rather, "purely functional claim language" is now permissible but only under the conditions of 35 U.S.C. § 112, sixth paragraph, i.e., if its scope is limited to the corresponding structure, material, or act disclosed in the specification and equivalents thereof.

In the absence of such limited construction, the concerns expressed by the Court in *Halliburton* are still applicable to prohibit the use of "purely functional" claim language. Hence, any claim that includes purely functional claim language, and which is not subject to the limited construction under 35 U.S.C. § 112, sixth paragraph, fails to meet the

requirements of 35 U.S.C. § 112, first paragraph, according to reasoning in *Halliburton* and thus is unpatentable.

While the particular claim language involved in the Supreme Court's *Halliburton* decision uses the word "means," the issue was claiming in a purely functional manner, a practice condemned by pre-existing case law, and not any particular problem associated uniquely with the word "means" as distinguished from other purely functional words and phrases. With regard to pre-existing case law around the time of the Supreme Court's *Halliburton* decision, *see In re Fuetterer*, 319 F.2d 259, 263 (CCPA 1963), wherein the Court of Customs and Patent Appeals explained:

> In the *Fullam* case *[In re Fullam*, 161 F.2d 247 (CCPA 1947)], this court stated that some claims were properly rejected as "functional in claiming merely the desired result well known to and sought after by workers skilled in the art." Claims directed merely to a "desired result" have long been considered objectionable primarily because they cover any means which anyone may ever discover of producing the result. See, e.g., *O'Reilly v. Morse*, 15 How. 62; *Heidbrink v. McKesson*, 290 F. 665.

When an applicant has not given notice to the public that his or her purely functional claim element is to be limited by the application of 35 U.S.C. § 112, sixth paragraph, a first concern is that the claim is indefinite under 35 U.S.C. § 112, second paragraph. A second concern is that such unlimited purely functional claiming may reasonably be construed to encompass any and all structures for performing the recited function, including those which are not what the applicant invented. Thus, it is doubly critical that the USPTO be in possession of such public notice when making a determination to grant a patent.

That is, when the limitation encompasses any and all structures or acts for performing a recited function, including those which were not what the applicant had invented, the disclosure fails to provide a scope of enablement commensurate with the scope of the claim and the claim would violate the prohibition of *Halliburton*.

We conclude that in claim construction before the USPTO, the Supreme Court's *Halliburton* case remains viable for claims having purely functional claim language which is *unlimited* either by (1) the application of 35 U.S.C. § 112, sixth paragraph, or (2) the additional recitation of structure.

(ii)

Additionally with regard to enablement, we contrast the *unlimited* situation discussed above with the situation of *limited* functional claim language where we are required to construe a claim limitation to cover the corresponding structure from the specification under 35 U.S.C. § 112, sixth paragraph.

The issue of these claims before us are distinguished from the claims found in *Northern Telecom*, where the Federal Circuit addressed the issue of enablement for a programmable processor-based data entry terminal, i.e., the enablement of a computer program implemented apparatus claim (not reproduced in the Federal Circuit's decision) which was drafted as a combination of a series of mean-plus-function elements and a programmed microprocessor.[8] *Northern Telecom, Inc. v. Datapoint Corp.*, 908 F.2d 931

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[8] Northern Telecom Claim 1: A source data entry terminal device for capturing and storing data for future processing or the like, comprising in combination: *a keyboard data entry means for* producing coded alphanumeric data representative of different keys upon actuation thereof;

(Fed. Cir. 1990). ("The invention of the [3,760,375] patent, a programmable processor-based batch data entry terminal, provided an improved way of entering, verifying, and storing data.").[9] As the Northern Telecom claim was directed to a "terminal device" comprising a combination of "means", the court analyzed the corresponding structure found in the specification from the point of view of a skilled programmer and upheld the claim in view of testimony from those skilled in the art. *Id.* 908 F.2d 941-42. In contrast, here, claim 51 is not so limited, either through invocation of § 112, sixth paragraph, or through the recitation of a specific device in the claim, so that such an enablement analysis cannot be employed.

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an optical display means for visual character read-out of such data; *means for* coupling coded data entered into said terminal to a data recorder or reproducer means; and *a programmed microprocessor* interfaced to each of said entry means, said display means and said coupling means; said microprocessor including a fixed-program read-only memory and a central logic unit embodying substantially all of the control logic for said entry means and display means; said read-only memory having a built-in program dedicating the terminal to a particular functional configuration and establishing an instruction set which time-shares said central logic unit with said entry means and display means to control the same in conformance with such functional configuration.

[9] We note that *Northern Telecom* is an infringement case, and as such the court operated under a less deferential standard of review. "Invalidity for lack of enablement is a conclusion of law and must be supported by facts proved by clear and convincing evidence, for the grant of the patent by the PTO carries with it the presumption of validity including compliance with § 112." In contrast, while legal conclusions of the USPTO are reviewed *de novo*, factual determinations of the Office are reviewed for substantial evidence. *In re Gartside*, 203 F.3d 1305, 1316 (Fed. Cir. 2000).

(iii)

In the present case, as discussed *supra*, we hold that the "tuple unit" and "decision unit" elements of claim 51 do not require claim interpretation under § 112, sixth paragraph.[10] As such, these two elements are each a purely functional recitation in that there is no structure presented in the claim element itself, and we are not required to import structure from the Specification into the claim under 35 U.S.C. § 112, sixth paragraph.

Therefore, claim 51 violates the rule set forth in *Halliburton*, because the claim includes functional elements not limited by the application of 35 U.S.C. § 112, sixth paragraph, and not containing any additional recitation of structure. For both the "tuple unit" and "decision unit" claim elements we find nothing that limits the scope of the elements. Rather, they are purely functional claim elements. Therefore, these limitations encompass any and all structures or acts for achieving that result, including those which were not what the applicant had invented. As such, this claim is unpatentable under 35 U.S.C. § 112, first paragraph, for lack of an enabling disclosure commensurate with the scope of the claims.

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[10] Contrast claim 51 to claim 33 which is written as a series of means-plus-function elements, which is of much more limited scope, and which is not rejected for lack of enablement.

VIII. ARTICLE OF MANUFACTURE CLAIMS 28 AND 32
(COMPUTER-READABLE MEDIUM)
- NEW GROUNDS OF REJECTION

A. *Rejection of Article of Manufacture Claims 28 and 32 under
35 U.S.C. § 112, First Paragraph*

(1)
Introduction

Using our authority under 37 C.F.R. § 41.50(b), we reject article of
manufacture claims 28 and 32 under 35 U.S.C. § 112, first paragraph, as not
being enabled for the scope of the claims.

(2)
Scope of Enablement - Single Means

"The long-recognized problem with a single means claim is that it
covers every conceivable means for achieving the stated result, while the
specification discloses at most only those means known to the inventor. *See
O'Reilly v. Morse*, 56 U.S. (15 How.) 62, 112, 14 L.Ed. 601 (1853)." *In re
Hyatt*, 708 F.2d 712, 714 (Fed. Cir. 1983). The court further stated:

> Thus, the claim is properly rejected for what used to be
> known as "undue breadth," but has since been appreciated as
> being, more accurately, based on the first paragraph of § 112.
> (footnote omitted).

Id.

(3)
Analysis

Claims 28 (on appeal) and 32 (not on appeal) respectively recite "A
computer-readable medium having software for performing the method of
claim 1" and "A computer-readable medium having software for performing

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the method of claim 30". The structural limitations in each claim are the "computer-readable medium" and the "software."

Appellants define the "computer-readable medium" as "any storage device used for storing data accessible by a computer." (Spec. 10:1-2.) Appellants then provide numerous examples of a computer-readable medium. "Examples of a computer-readable medium include: a magnetic hard disk; a floppy disk; an optical disk, such as a CD-ROM and a DVD; a magnetic tape; a memory chip; and a carrier wave used to carry computer-readable electronic data, such as those used in transmitting and receiving e-mail or in accessing a network." (Spec. 10:2-5.)

Appellants define "software" as "prescribed rules to operate a computer." (Spec. 10:6.) Appellants then provide numerous examples of software. "Examples of software include: software; code segments; instructions; computer programs; and programmed logic." (Spec. 10:6-7.)

Given Appellants' expansive definitions, and Appellants' failure to limit the method of claim 1 (or claim 30) to a particular machine by claiming (or even disclosing) a particular software algorithm to support the software now recited in claim 28 (and claim 32), we conclude that the proper construction of "a computer-readable medium having software for performing the method of . . ." is as "any software on any computer-readable medium for performing the method of . . .". We further conclude that Appellants' claims 28 and 32 each cover every conceivable software-medium article of manufacture for achieving the stated result, while the specification discloses at most only those examples known to the inventor.

This parallels the enablement problem underlying so called "single means" claims. *Cf. In re Hyatt*, 708 F.2d at 714.

Therefore, we conclude that claims 28 and 32 are unpatentable as not being enabled for the scope of the claims.

B. *Rejection of Signal Claims 28 and 32 under 35 U.S.C. § 101*

(1)
Introduction

Using our authority under 37 C.F.R. § 41.50(b), we reject claims 28 and 32 under 35 U.S.C. § 101 because the claimed invention is directed to non-statutory subject matter.

(2)
Principles of Law

A transitory, propagating signal is not a "process, machine, manufacture, or composition of matter." Those four categories define the explicit scope and reach of subject matter patentable under 35 U.S.C. § 101; thus, such a signal cannot be patentable subject matter. *In re Nuijten*, 500 F.3d 1346, 1357 (Fed. Cir. 2007). "If a claim covers material not found in any of the four statutory categories, that claim falls outside the plainly expressed scope of § 101 even if the subject matter is otherwise new and useful." *Id.* at 1354.

Even when a claim covers patentable subject matter within the scope of 35 U.S.C. § 101, if the claim also covers subject matter that would be unpatentable under § 101, then applicant must limit the claim to avoid the nonstatutory subject matter to in turn avoid a rejection under § 101. *Cf. Amgen, Inc. v. Hoechst Marion Roussel, Inc.*, 314 F.3d 1313, 1329

(Fed. Cir. 2003) ("By limiting the claims in this way Amgen simply avoids claiming specific subject matter that would be unpatentable under § 101."); *see also* MPEP § 2105 ("If the broadest reasonable interpretation of the claimed invention as a whole encompasses a human being, then a rejection under 35 U.S.C. 101 must be made indicating that the claimed invention is directed to nonstatutory subject matter.").

(3)
Analysis

Claims 28 and 32 are each directed to "A computer-readable medium" which Appellants define as "any storage device used for storing data accessible by a computer" (Spec. 10:1-2). Appellants go on to provide storage device examples which include "a magnetic hard disk; a floppy disk; an optical disk, such as a CD-ROM and a DVD; a magnetic tape; a memory chip." *Id. at 10:2-3.* Appellants then provide a storage device example of "a carrier wave used to carry computer-readable electronic data." *Id. at 10:3.*

We specifically address only the "carrier-wave" embodiments of claims 28 and 32. We reach no conclusion as to whether the remaining embodiments of these claims are directed to subject matter which is eligible for patent protection under 35 U.S.C. § 101. We find that these "carrier-wave" embodiments are each a transitory, propagating signal. Therefore, we conclude that these embodiments are directed to non-statutory subject matter. *See In re Nuijten*, 500 F.3d at 1357.

Because we have concluded that claims 28 and 32 each covers at least one embodiment which is directed to subject matter that is unpatentable under § 101, we further conclude that claims 28 and 32 are unpatentable as

being directed to non-statutory subject matter. *Cf. Amgen*, 314 F.3d at 1329; *see also* MPEP § 2105.

IX. FINALITY OF DECISION

Regarding the affirmed rejection(s), 37 C.F.R. § 41.52(a)(1) provides "Appellant may file a single request for rehearing within two months from the date of the original decision of the Board."

In addition to affirming the Examiner's rejection(s) of one or more claims, this decision contains new grounds of rejection pursuant to 37 C.F.R. § 41.50(b) (2007). 37 C.F.R. § 41.50(b) provides "[a] new ground of rejection pursuant to this paragraph shall not be considered final for judicial review."

37 C.F.R. § 41.50(b) also provides that Appellant, <u>WITHIN TWO MONTHS FROM THE DATE OF THE DECISION</u>, must exercise one of the following two options with respect to the new grounds of rejection to avoid termination of the appeal as to the rejected claims:

> (1) *Reopen prosecution.* Submit an appropriate amendment of the claims so rejected or new evidence relating to the claims so rejected, or both, and have the matter reconsidered by the Examiner, in which event the proceeding will be remanded to the Examiner. . . .

> (2) *Request rehearing.* Request that the proceeding be reheard under § 41.52 by the Board upon the same record. . . .

Should Appellant elect to prosecute further before the Examiner pursuant to 37 C.F.R. § 41.50(b)(1), in order to preserve the right to seek review under 35 U.S.C. §§ 141 or 145 with respect to the affirmed rejection,

the effective date of the affirmance is deferred until conclusion of the prosecution before the Examiner unless, as a mere incident to the limited prosecution, the affirmed rejection is overcome.

If Appellant elects prosecution before the Examiner and this does not result in allowance of the application, abandonment or a second appeal, this case should be returned to the Board of Patent Appeals and Interferences for final action on the affirmed rejection, including any timely request for rehearing thereof.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a). *See* 37 C.F.R. § 1.136(a)(1)(iv) (2007).

X. CONCLUSIONS OF LAW

(1) Appellants have established that the Examiner erred in rejecting claims 50 and 51 as being unpatentable under 35 U.S.C. § 103(a) over Aiken.

(2) Appellants have not established that the Examiner erred in rejecting claims 1-28, 45-48, and 52-57 as being unpatentable under 35 U.S.C. § 103(a) over Aiken.

(3) Appellants have not established that the Examiner erred in rejecting claim 44 as being unpatentable under 35 U.S.C. § 103(a) over Aiken and Haber.

(4) Since we have entered diverse new grounds of rejection, our decision is not a final agency action.

(5) Claims 1-28, 30-33, and 44-62 are not patentable.

XI. DECISION

The Examiner's rejections of claims 1-28, 44-48, and 52-57 are affirmed.

The Examiner's rejection of claims 50 and 51 is reversed.

We reject claims 27, 28, 31, 32, and 51 under 35 U.S.C. § 112, first paragraph.

We reject claims 33 and 51 under 35 U.S.C. § 112, second paragraph.

We reject claims 1-26, 28, 30, 32, 44-50, and 52-62 under 35 U.S.C. § 101.

<u>AFFIRMED-IN-PART</u>
<u>37 C.F.R. § 41.50(b)</u>

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